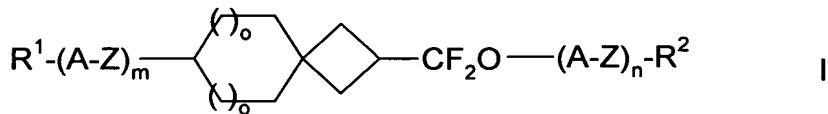


## Patent Claims

## 1. Cyclobutane derivatives of the formula I

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$R^1, R^2$  are identical or different and each, independently of one another, denote H, halogen (F, Cl, Br or I) or a linear or branched, optionally chiral alkyl or alkoxy radical having 1 to 15 C atoms which is unsubstituted or mono- or polysubstituted by halogen and in which one or more  $CH_2$  groups may each be replaced, independently of one another, by -O-, -S-, -CO-, -CO-O-, -O-CO-, -O-CO-O-, -CH=CH-, -CH=CF-, -CF=CF-, -C≡C- or  in such a way that heteroatoms are not linked directly to one another, -CN, -SCN, -NCS, -SF<sub>5</sub>, -SCF<sub>3</sub>, -CF<sub>3</sub>, -CF=CF<sub>2</sub>, -CF<sub>2</sub>CF<sub>2</sub>CF<sub>3</sub>, -OCF<sub>3</sub>, -OCHF<sub>2</sub>, -CF<sub>2</sub>CH<sub>2</sub>CF<sub>3</sub> or -OCH<sub>2</sub>CF<sub>2</sub>CHFCF<sub>3</sub>,

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$A$  is identical or different and in each case, independently of one another, denotes

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- a) trans-1,4-cyclohexylene, in which, in addition, one or more non-adjacent  $CH_2$  groups may be replaced by -O- and/or -S- and in which, in addition, one or more H atoms may be replaced by F,
- b) 1,4-phenylene, in which one or two CH groups may be replaced by N and in which, in addition, one or more H atoms may be replaced by halogen

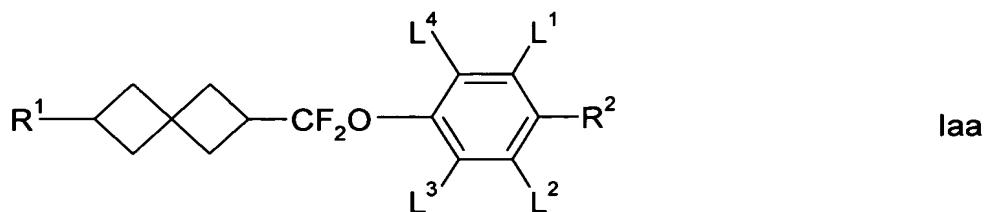
(F, Cl, Br or I), -CN, -CH<sub>3</sub>, -CHF<sub>2</sub>, -CH<sub>2</sub>F, -OCH<sub>3</sub>, -OCHF<sub>2</sub> or -OCF<sub>3</sub>,

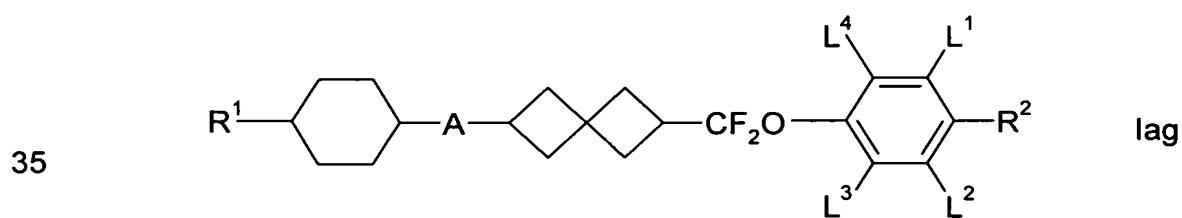
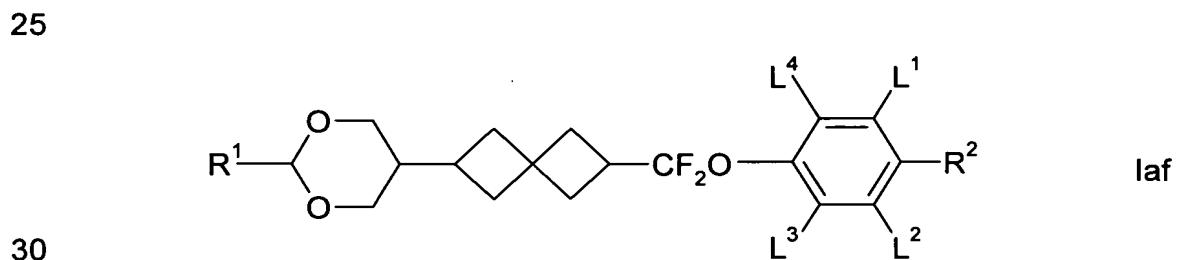
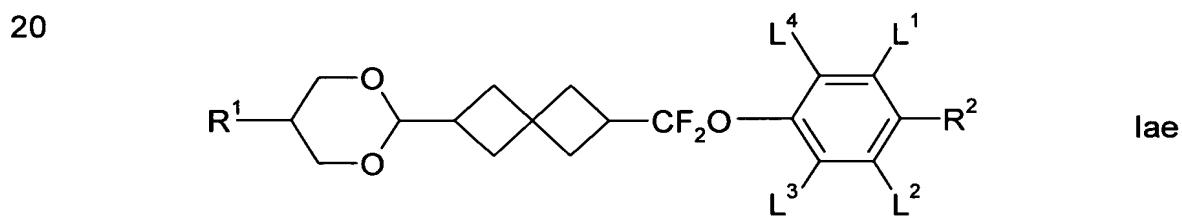
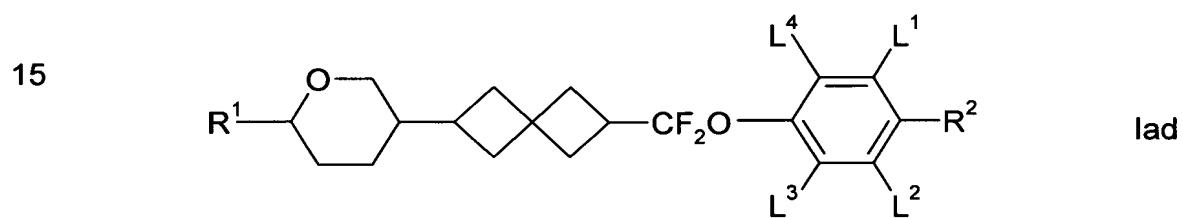
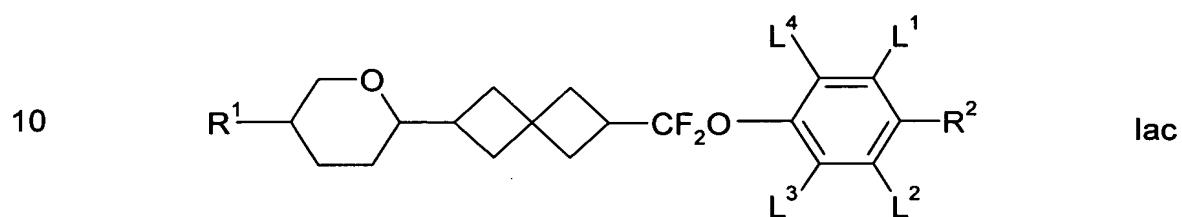
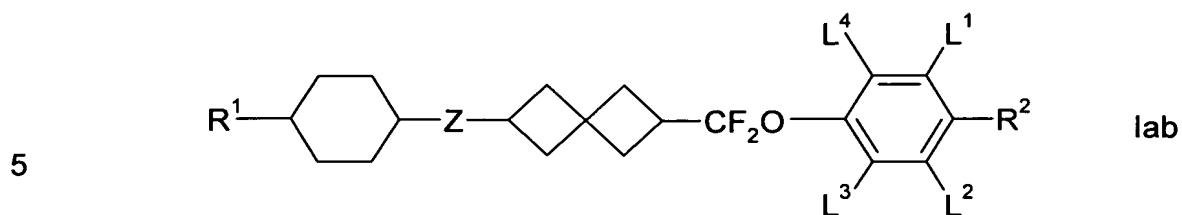
Z is identical or different and in each case, independently of one another, denotes  $-O-$ ,  $-CH_2O-$ ,  $-OCH_2-$ ,  $-CO-O-$ ,  $-O-CO-$ ,  $-CF_2O-$ ,  $-OCF_2-$ ,  $-CF_2CF_2-$ ,  $-CH_2CF_2-$ ,  $-CF_2CH_2-$ ,  $-CH_2CH_2-$ ,  $-CH=CH-$ ,  $-CH=CF-$ ,  $-CF=CH-$ ,  $-CF=CF-$ ,  $-CF=CF-COO-$ ,  $-O-CO-CF=CF-$ ,  $-C\equiv C-$  or a single bond.

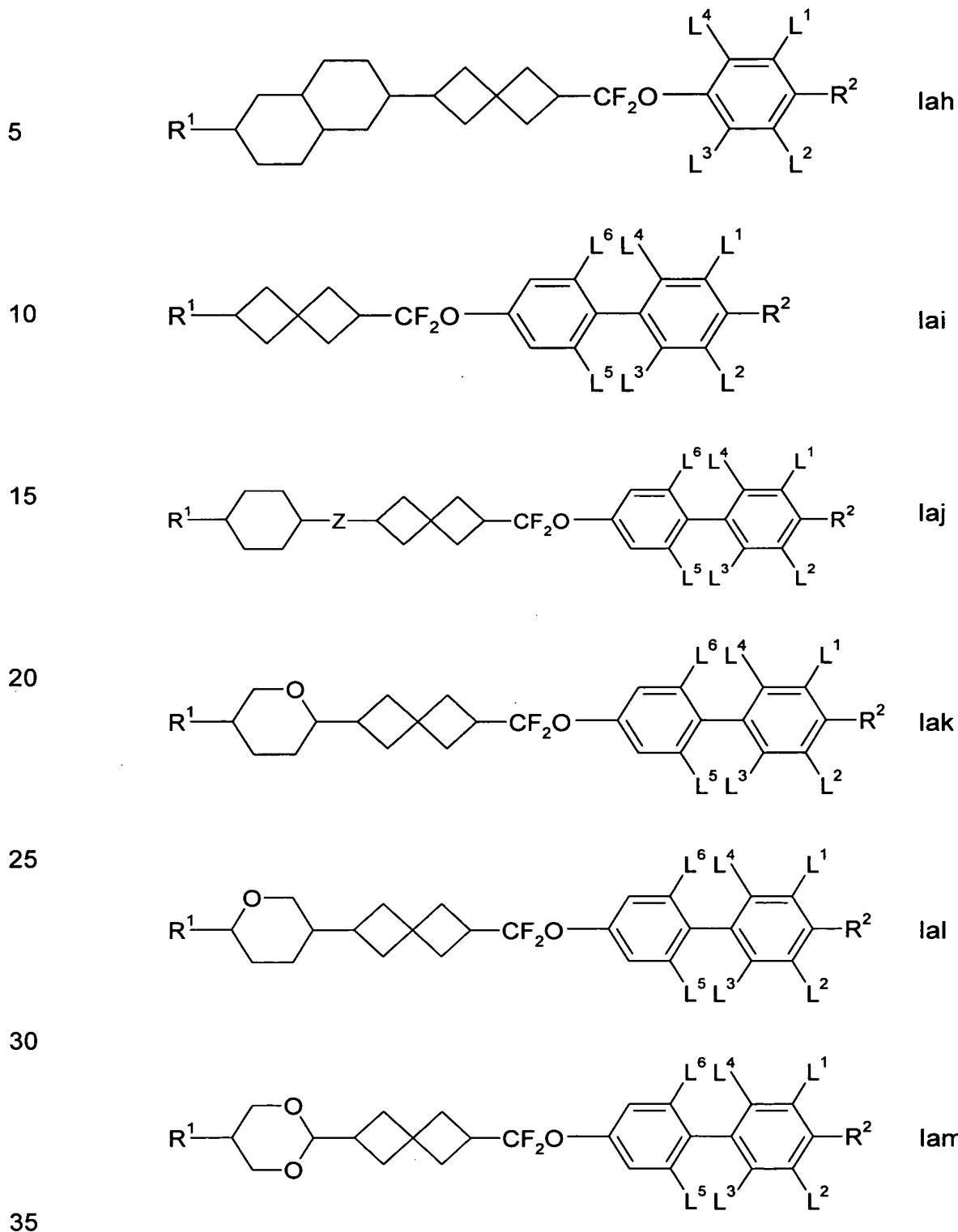
$m, n$  are identical or different and, independently of one another, denote 0, 1 or 2, and

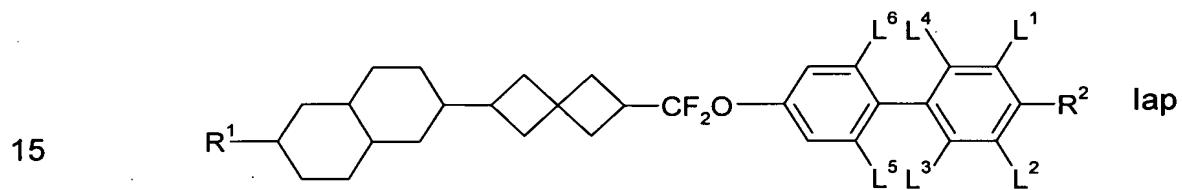
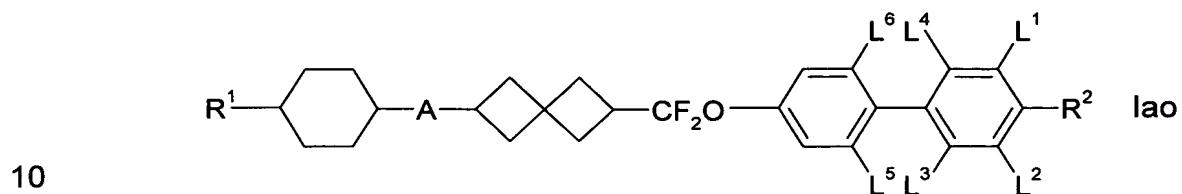
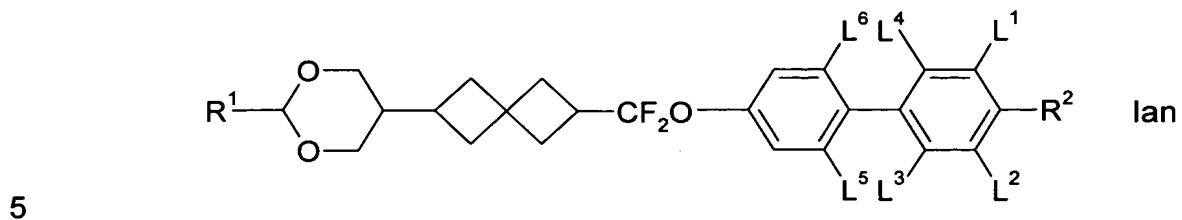
8 denotes 0 or 1.

2. Compounds according to Claim 1, characterised in that both  $\alpha$  denote 0.
3. Compounds according to Claim 1, characterised in that both  $\alpha$  denote 1.
4. Compounds according to Claim 2, characterised in that they have one of the following formulae:





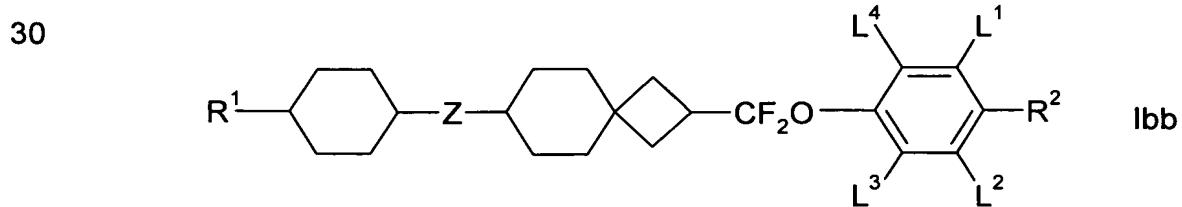
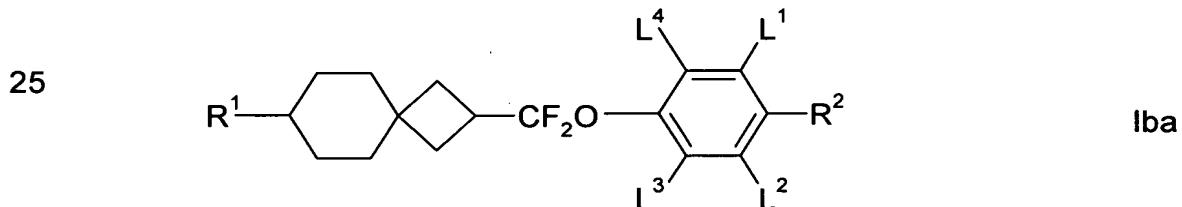




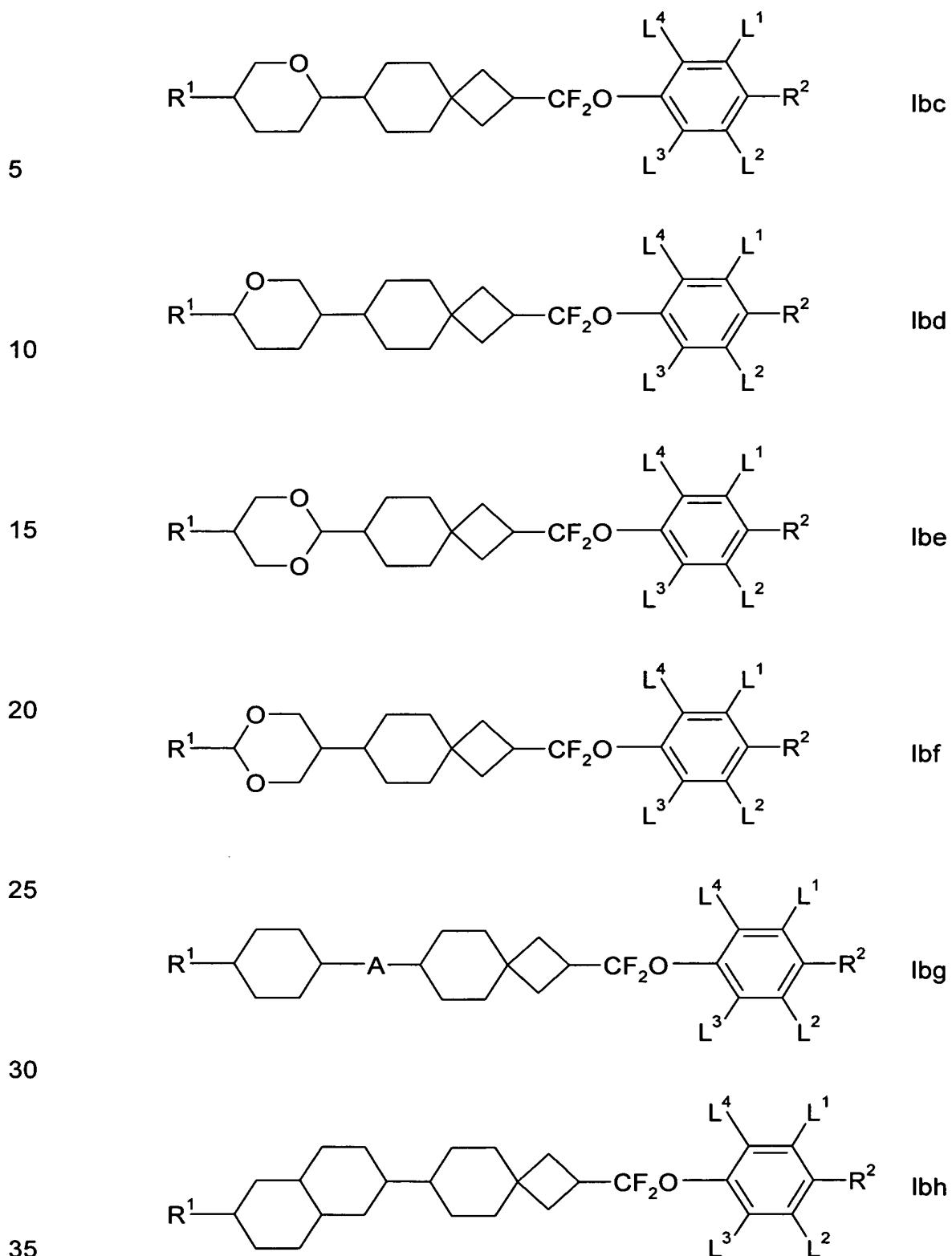
in which L<sup>1</sup>, L<sup>2</sup>, L<sup>3</sup>, L<sup>4</sup>, L<sup>5</sup> and L<sup>6</sup>, are identical or different and, independently of one another, denote H or F.

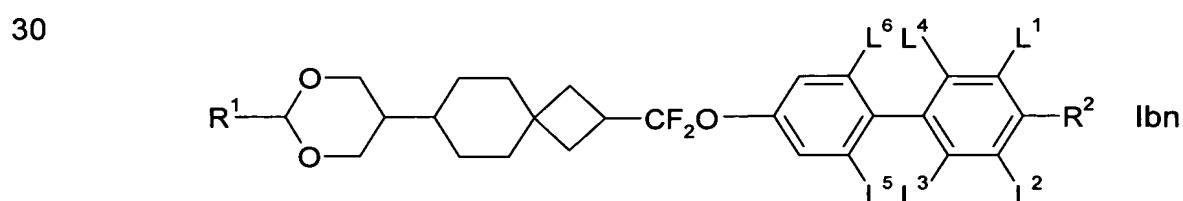
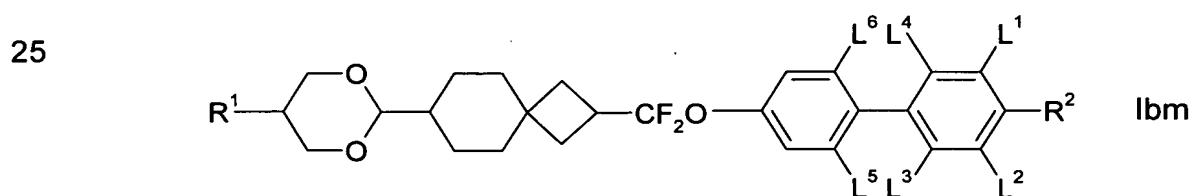
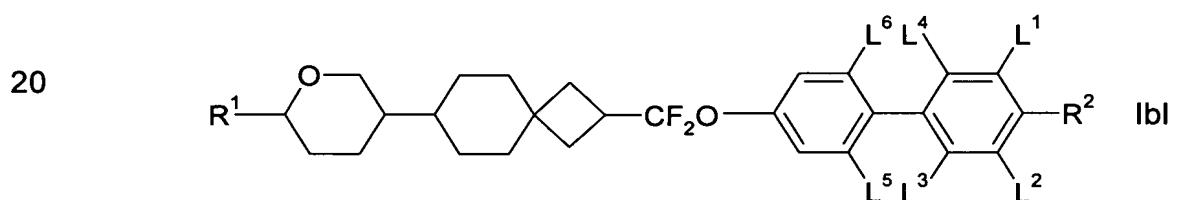
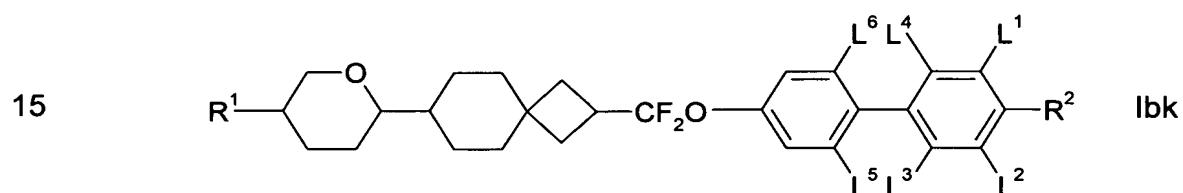
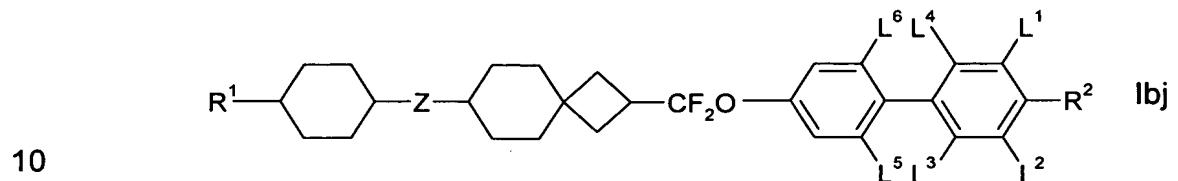
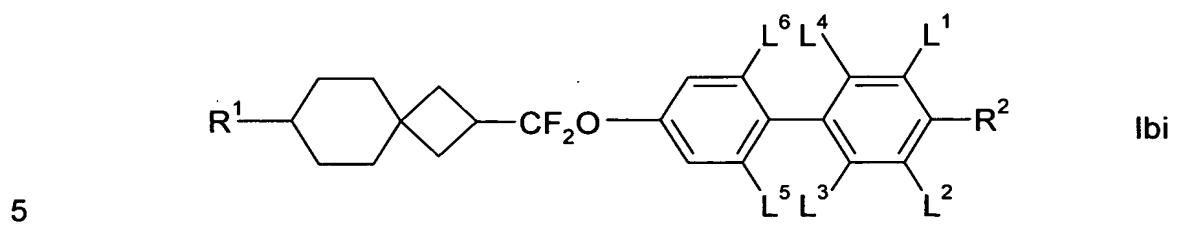
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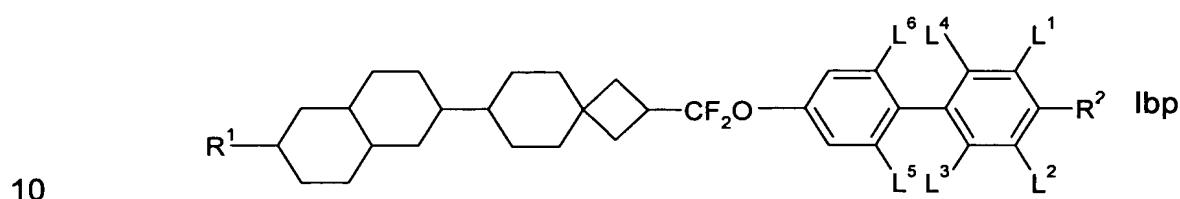
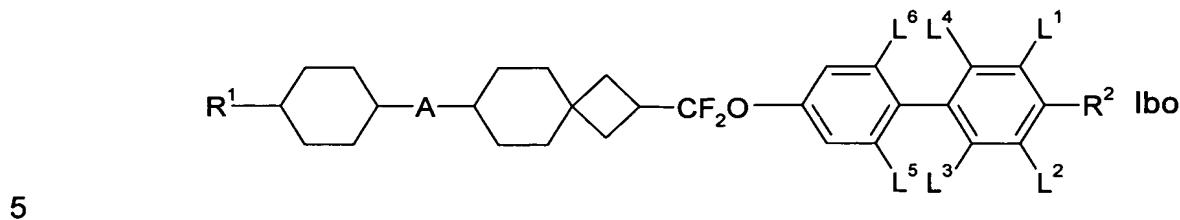
5. Compounds according to Claim 3, characterised in that they have one of the following formulae:



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in which L<sup>1</sup>, L<sup>2</sup>, L<sup>3</sup>, L<sup>4</sup>, L<sup>5</sup> and L<sup>6</sup>, are identical or different and, independently of one another, denote H or F.

15 6. Compounds according to at least one of the preceding claims, characterised in that R<sup>1</sup> denotes H or a linear alkyl radical having 1 to 10 C atoms.

20 7. Compounds according to at least one of the preceding claims, characterised in that R<sup>2</sup> denotes H, a linear alkoxy radical having 1 to 10 C atoms, -F, -Cl, -CF<sub>3</sub>, -OCF<sub>3</sub>, -OCHF<sub>2</sub>, -CN, -NCS or -SF<sub>5</sub>.

25 8. Use of compounds of the formula I according to at least one of the preceding claims as component(s) of liquid-crystalline media.

9. Liquid-crystalline medium having at least two liquid-crystalline components, characterised in that it comprises at least one compound of the formula I according to at least one of Claims 1 to 7.

30 10. Liquid-crystal display element, characterised in that it contains, as dielectric, a liquid-crystalline medium according to Claim 9.

11. Reflective or transflective liquid-crystal display element, characterised in that it contains, as dielectric, a liquid-crystalline medium according to Claim 9.

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12. Electro-optical display element, characterised in that it contains, as dielectric, a liquid-crystalline medium according to Claim 9.

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